

## **4.0 Crash Selection Process**

This section describes the process used to select the sample of serious HM crashes for initial database construction. A summary of the selected crashes and their associated characteristics is provided along with a discussion of how the database was populated.

### **4.1 Selection of Serious Crashes**

Any crash that occurred in 2001 and was recorded in either MCMIS or HMIS by February 2002 was a candidate for inclusion in this process. This resulted in a pool of 1,200 MCMIS and 300 HMIS crash records.

The initial selection criterion was to include any crashes that were reported in both the HMIS and MCMIS databases. The process of identifying these crashes was complicated by the fact that the HMIS and MCMIS files do not include a common carrier designation – even the carrier names and addresses are frequently different. This criterion was applied by searching for a common crash date, state and location; if those all agreed, it was assumed that the same crash had been recorded in both databases. The selection was validated by comparing the carrier name and commodity shipped. If the names were reasonably similar, and the same commodity was involved in the crash, then the crashes included in both databases were assumed to be the same.

Table 4-1 illustrates this challenge relative to carrier name. Of the eight cases shown, only Erickson Transport Corp lists the exact same information in the respective carrier name field of both the MCMIS and HMIS databases. Several others are close but differ slightly, typically the zip code or the spelling of the company name.

There are many possible reasons for these differences. The PAR information likely comes from the driver or, if the driver is seriously injured, from the local branch office of the trucking firm. The HMIS record is supplied by the carrier and consequently, the home office address is often provided. The use of a common registration number in both databases will make it easier to identify and compare the same crash in both databases.

The information presented in Table 4-1 is representative of the 45 accidents that were reported in both HMIS and MCMIS. There were actually 47 trucks identified in HMIS, with two crashes each involving two HM trucks. Since trucks and not crashes are the population of interest, the 47 observations represents the sample size selected for this analysis.

**Table 4-1. Carrier Information Report Differences for the Same Crash**

MCMIS				HMIS			
Carrier Name	City	Zip	State	Carrier Name	City	Zip	State
KENAN TRANSPORT COMP	KNOXVILLE	37921	TN	KENAN TRANSPORT CO INC	CHAPEL HILL	275152729	NC
SEL LO OIL INC	ALTOONA	16601	PA	SEL-LO OIL INC	ALTOONA	16601	PA
CONWAY TRANSPORTATION SERVICES INC	NORMAL	61761	IL	CONWAY CENTRAL EXPRESS	ANN ARBOR	48103	MI
UNITED PETROLEUM TRANSPORTS INC	OKLAHOMA CITY	73129-7972	OK	UNITED PETROLEUM TRANSPORTS	OKLAHOMA CITY	731299901	OK
CRESS GAS CO	RICHLANDTOWN	18951	PA	CRESS GAS COMPANY	RICHLANDTOWN	18955	PA
ERICKSON TRANSPORT CORP	SPRINGFIELD	65808	MO	ERICKSON TRANSPORT CORP	SPRINGFIELD	65808	MO
ALASKA WEST EXPRESS INC	ANCHORAGE	99501	AK	ALASKA WEST EXPRESS INC	FAIRBANKS	99701	AK
FLORIDA ROCK AND TANK LINES	JACKSONVILLE	32201	FL	FLORIDA ROCK & TANK LINES INC	JACKSONVILLE	32207	FL

Once these crashes were identified, update queries were used to transfer desired information into the Serious HM Crash Database. One difficulty arose with the HMIS Remarks file in that the field is limited to 80 characters per record, so multiple records may be used to enter a full description of the crash. The multiple records for each crash were reduced to a single memo field by first importing the records into a Word table, merging the rows that contained a single crash description, removing the carriage return at the end of each line, and then importing the new table back into ACCESS. An update query was then used to populate the crash description memo field for the selected crash. At the same time, to increase the consistency in the Serious HM Crash Database, the state, county, and place, Federal Information Processing Standard (FIPS) code tables were imported from the Census Files into the database. Thus, for any crash, the FIPS code for the crash location is stored.

The following steps summarize the process followed for this portion of the crash selection process:

- Selecting all crashes in which a fatality occurred. Of the MCMIS crashes, there were 64 records in which a fatality occurred. Since 6 of the fatal crashes were also reported in HMIS, the total number of records in the Serious HM Crash Database rose to 105.
- Selecting all the crashes involving explosives (Class 1). These were added and, since none of the prior-selected fatalities or HMIS records involved explosives, 14 additional crashes were selected, bringing the total to 119 records in the Serious HM Crash Database.
- Adding any MCMIS reported crashes involving flammable gases (Division 2.1). A total of 14 crashes were identified, with 11 having not been previously identified, bringing the total number of crashes to 130 records in the Serious HM Crash Database.

- Adding flammable and combustible liquid (Class 3) spills. This brought the total number of unique records in the Serious HM Crash Database to 170.
- Adding radioactive material crashes (Class 7), yielding 3 more records, none of which had been previously selected. This brought the total to 173.
- Selecting in successive order all other crashes involving fires/explosions, cargo tanks, and/or rollovers, resulting in a final total to 214 records in the Serious HM Crash Database.

Table 4-2 shows the characteristics of the crashes selected for more detailed analysis.

**Table 4-2. Selection of 214 Crashes for More Detailed Analysis**

HMIS Number	Class 1	Class 2.1	Class 3 Spills	Class 7	Fatality	Fire or Explosion	Cargo Tank	Rollover	Spill	Totals
2		2							2	2
1		1								1
4			4		4				4	4
18			18						18	18
2					2					2
11									11	11
9										9
	1						1	1		1
	4						4			4
	2							2		2
	7									7
		2			2	2		2	2	2
		3			3					3
		6						6	6	6
			1		1			1	1	1
			5		5				5	5
			1			1		1	1	1
			3			3			3	3
			3				3	3	3	3
			33					33	33	33
				1			1			1
				1				1	1	1
				1						1
					1	1	1			1
					1	1		1		1
					1		1	1	1	1
					2		2	2		2
					2		2		2	2
					5		5			5
					3			3	3	3
					1			1		1
					2				2	2
					29					29
						1	1		1	1
						3	3			3
							7	7	7	7
							14	14		14
								21	21	21
47	14	14	68	3	64	12	45	100	127	214

Note: If the criterion indicated by the heading is met for the row, the accident total is

## 4.2 Populating Data Fields in the Serious HM Crash Database

Populating the Serious HM Crash Database with desired information for the 214 selected crashes utilized a four-step process:

1. Data from MCMIS was entered into the database for each crash.
2. HMIS data was added where the crash identified in MCMIS was recorded in HMIS.
3. PARs were requested from the states where the selected crashes occurred in order to supplement the MCMIS and HMIS data.
4. Data was obtained from interviews with key participants possessing information about the specific crash.

A letter was prepared by FMCSA for distribution to the key individual responsible for PARs in each of the thirty-three states where these reports were needed. The letters included a specific list of the requested PARs. By mid-June, the project team had received PARs from twenty-two states. FMCSA then sent e-mails to their state representatives in the eleven states that had not responded earlier, requesting that they contact their state counterparts in order to request the PARs included in the previous letters. Three months later, the Battelle team had received all but 14 of the requested PARs. For those states with a small number of selected crashes that had not responded, it was decided to not continue to pursue attempts to obtain those reports as part of Phase I. In other cases, perhaps because the report number in MCMIS was incorrect, a state could not find the PAR, despite efforts to contact the county in which the crash supposedly occurred. Ultimately, PARs were obtained for roughly 85% of the selected serious crashes.

Once a PAR was received, its contents were entered into a temporary database. It was then reviewed to ensure that the information pertained to the appropriate crash. Once verified, the data was entered into the Serious HM Crash Database. The next step in the process was to supplement the crash record with data obtained from follow-up interviews with key participants.

Key participants were defined to include those parties with unique information about the HM crash. These included the driver, tow truck driver, police officer, and the carrier. The carrier was determined to be the most important source. Representative information sought from the carrier included the type of cargo carried, spill quantity, MC number of the cargo tank, damage sustained by a container, and the type of rollover protection used on the vehicle.

Before the telephone calls to key participants could begin, materials were prepared that included information that could be used to describe the project and its purpose. The material included a statement that the information would be used for the report and analytical purposes, but that the unique personnel information such as carrier name would not be used publicly. Specific questions were also developed for each key participant category.

In order to contact a carrier, repeated phone calls were often required. When reached, some carriers were reluctant to provide information on the telephone. To address these contingencies, the carrier was sent a letter describing the project and including questions that related to a specific crash. Despite these efforts, approximately 23% of the attempts to reach a carrier were unsuccessful because either the carrier could not be located or contacted, or the carrier refused to answer questions because a particular crash was in litigation.